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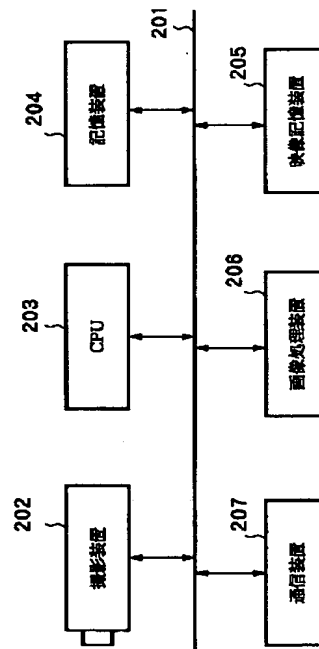
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(54) 【発明の名称】 撮像制御装置およびその制御方法

(57) 【要約】

【目的】 管理情報に基づいて撮像資源の制御要求を受け、却下または保留することができる撮像制御装置およびその制御方法を提供する。

【構成】 CPU203は、通信装置207により受信された撮影装置202に対する制御要求の発行元に対応する管理情報に基づいて、その制御要求を受け受するか否かを決定し、受け受することを決定した制御要求に基づいて、撮影装置202を制御する。また、既にその制御が開始されている第一の制御要求がある場合は、管理情報に含まれる発行元に対応する優先度情報に基づいて、第一の制御要求と新たに受信された第二の制御要求との優先度を判定し、その判定結果に基づいて第二の制御要求を受け受するか否かを決定する。そして、もし第二の制御要求を受け受することを決定した場合は、第一の制御要求を保留する。



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**CLAIMS**

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[Claim(s)]

[Claim 1] A receiving means to be the image pick-up control unit of the image pick-up resource contained in the system which two or more resources of each other are connected through a network, and is shared, and to receive the control demand to said image pick-up resource, A decision means to determine whether receive the control demand based on the management information corresponding to the issuance origin of the control demand received by said receiving means, The image pick-up control unit characterized by having the control means by which receiving with said decision means controls said image pick-up resource based on the determined control demand.

[Claim 2] It is the image pick-up control unit indicated by claim 1 characterized by to determine whether said decision means judges the priority of the first control demand by which the control has already been started, and the second newly received control demand based on the priority information corresponding to the issuance origin included in said management information, and receives said second control demand based on the judgment result.

[Claim 3] Said control means is the image pick-up control unit indicated by claim 2 characterized by suspending said first control demand when receiving said second control demand with said decision means is determined.

[Claim 4] Said control means is the image pick-up control unit indicated by claim 3 characterized by resuming the control of said image pick-up resource based on said first suspended control demand after the control of said image pick-up resource based on said second control demand is completed.

[Claim 5] Said decision means is the image pick-up control unit indicated by claim 1 characterized by determining whether the content of control of the second control demand judges [ by which it was newly received ] whether collides mutually or not in already being started, and receives said second control demand based on the judgment result as the content of control of the first control demand.

[Claim 6] Said control means is the image pick-up control unit indicated by claim 5 characterized by controlling based on said second control demand while controlling said image pick-up resource based on said first control demand, when receiving said second control demand with said decision means is determined.

[Claim 7] Said control means is the image pick-up control unit indicated by claim 6 characterized by being based on said management information, and permitting or refusing distribution of a part of the image to the control demand which requires distribution of the image acquired with said image pick-up resource.

[Claim 8] Said control means is the image pick-up control unit indicated by any of claim 1 to claim 7 characterized by receiving with said decision means controlling the voice input means included in said image pick-up resource based on the determined control demand they are.

[Claim 9] The receiving step which is the image pick-up control approach of the image pick-up resource contained in the system which two or more resources of each other are connected through a network, and is shared, and receives the control demand to said image pick-up resource, The decision step which determines whether receive the control demand based on the management information corresponding to the issuance origin of the control demand which received at said receiving step, The image pick-up control approach characterized by having the control step by which receiving at said decision step controls said image pick-up resource based on the determined control demand.

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DETAILED DESCRIPTION

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## [Detailed Description of the Invention]

[0001]

[Industrial Application] Concerning an image pick-up control unit and its control approach, two or more resources mind this invention, and it relates to the image pick-up control unit and its control approach of the image pick-up resource contained in the system which each other is connected and is shared.

[0002]

[Description of the Prior Art] In the distributed system using a network, resources, such as a processor resource, external storage, and an airline printer, are used in the form suitably distributed among multiple users based on various kinds of resource-sharing devices. Moreover, voice, an image, etc. are set as the object shared [ in a distributed system ] with network improvement in the speed or improvement in the speed of a computer system, and the image information utilization system using a remote camera is also this one.

[0003]

[Problem(s) to be Solved by the Invention] However, there are the following troubles in the technique mentioned above. That is, it is not appropriate to apply the share device over the resource of a conventional type to the remote camera share device in a general distributed environment.

[0004] For example, as a resource-sharing device over external storage, although the file system and the database management system are used, these devices perform authorization or rejection of "refer to the data based on access control information" while assigning the field where it differs on a store as a storing region of each user's file, or a record. Moreover, the resource-sharing device over an airline printer chooses the airline printer which fills a printing demand, or performs scheduling for making its printing demands not overlap mutually. Generally, since resource-sharing management from which a class differs must be provided with the device based on the special feature of a resource, to it, the receiving-above-mentioned external memory share equipment and airline printer resource-sharing control mechanism of applying to share management of a remote camera clearly is unsuitable.

[0005] The following are one of those for which the share control mechanism of a remote camera is asked.

(1) It is acceptance control of a conflicting requirement mutually [ the content control (4) plurality of the image information photoed with control of the field angle of the distribution control (2) remote camera of image information to a remote camera, brightness, etc., and the attitude control (3) camera of a camera ]. [0006] These devices must fulfill the special feature of a remote camera. Generally especially the information acquired from a remote camera is the image information on the real time, and has constraint that there must not be no thing [ \*\*\*\*\* / informational distribution or a control demand response ] it is [ thing ] behind during the period. The same is completely said of the audio input unit usually used with a remote camera about this point.

[0007] That is, there is nothing that fulfills the special feature of a remote camera in the present resource-sharing device as an access control mechanism to the remote camera control in a distributed system, and the image information acquired from a remote camera. Consequently, there are a problem that a remote camera is fully unsharable among two or more users, and a trouble of permitting control of a camera or permitting reference of image information unfairly.

[0008] This invention aims at offering the image pick-up control unit which it is, and can be based on management information, and can receive, dismiss or suspend the control demand of an image pick-up resource and its control approach for solving an above-mentioned problem.

[0009]

[Means for Solving the Problem] It reaches. [Function] This invention is equipped with the following configurations as a way stage which attains the aforementioned object.

[0010] The image pick-up control unit concerning this invention is a receiving means to be the image pick-up control unit of the image pick-up resource contained in the system which two or more resources of each other are connected through a network, and is shared, and to receive the control demand to said image pick-up resource. It carries out having a decision means to determine whether receive the control demand, and the control means by which receiving with said decision means controls said image pick-up resource based on the determined control demand based on the management information corresponding to the issuance origin of the control demand received by said receiving means as the description.

[0011] Moreover, the image pick-up control approach concerning this invention is a receiving step which is the image pick-up control approach of the image pick-up resource contained in the system which two or more resources of each other are connected through a network, and is shared, and receives the control demand to said image pick-up resource. It carries out having the decision step which determines whether receive the control demand, and the control step by which receiving at said decision step controls said image pick-up resource based

on the determined control demand based on the management information corresponding to the issuance origin of the control demand which received at said receiving step as the description.

[0012]

[Example] Hereafter, the image pick-up control unit of one example concerning this invention is explained to a detail with reference to a drawing.

[0013]

[The 1st example] Drawing 1 is the block diagram showing the example of a configuration of the distributed system using the image information using the remote camera of one example concerning this invention. In this drawing, 101 is a computer network and a variety of resources, such as a user terminal 102 and the remote camera 103, are combined. This computer network 101 is WAN constituted by others, ISDN, or a dedicated line or a public line. [ LANs /, such as Ethernet and FDDI, ]

[0014] A user terminal 102 is the terminal unit which was connected to the computer network 101 and combined required things, such as CPU, main storage, external storage, an input unit, a display, and a communication device, for example, is a computer system.

[0015] Although it is whether the remote camera 103 makes the connection directly using the camera-control equipment of dedication, or to perform it indirectly through a terminal unit 102 although it connects with a computer network 101, the controlling mechanism which mentions later in any case works. In addition, in the following explanation, it shall connect with a computer network 101 using the camera-control equipment of dedication.

[0016] Drawing 2 is the block diagram showing the example of a configuration of the control device of the remote camera 103. In this drawing, 202 is photography equipment which makes a static image or a dynamic image image information, and inputs it into remote camera-control equipment (below, it may be called a "camera"). In addition, in this example, although it is inputted by the audio input unit attached to photography equipment 202 and distributes with image information, sound information is not restricted to this, and also when making speech information become independent of image information, for example, distributing, it can apply the approach shown in this example as it is. Moreover, it is also possible to use two or more audio input units to one photography equipment 202. In addition, below, image information and sound information are doubled and it explains as image information.

[0017] CPU by which 203 controls the whole remote camera-control equipment, and 204 are storage, and they are used as work-piece memory by CPU203 while the program and control information which CPU203 performs are memorized. The image storage which stores temporarily the image information as which 205 was inputted from photography equipment 202, and 206 are image processing systems which perform various kinds of image processings to the image information stored in the image storage 205. In addition, the software processing using CPU203 depending on the content of the image processing is also possible. Moreover, 207 is a communication device and performs transmission of the response to reception of the camera-control demand from the outside, and a camera-control demand, distribution of the image information stored in the image storage 205, etc. These functional block is mutually connected by the bus 201.

[0018] Drawing 3 is drawing showing an example of the access-control managed table stored in the store 204 of camera-control equipment, and this table is used for access-control management by CPU203.

[0019] In this drawing, 301 is a user-identification child for identifying the user who published the camera-control demand, and changes the thing used in common on the distributed system shown in drawing 1, or it into the identifier which can recognize remote camera-control equipment. 302 is a terminal identification child for identifying the terminal unit of the issuance origin at the time of a camera-control demand being published, and is an identifier depending on the network where the terminal is connected.

[0020] 303 is a priority registered for every group of the user-identification child 301 and the terminal identification child 302. Remote camera-control equipment processes a camera-control demand based on this priority 303. In this example, it considers as what has a high priority, so that this value is large. In addition, the maximum of the priority permitted to the group of the user-identification child 301 and the terminal identification child 302 is managed on another table etc.

[0021] 304 is a camera-control parameter permitted for every group of the user-identification child 301 and the terminal identification child 302, and the image-processing parameter which shows the image processing applied to the image information acquired from the range of many setting out of the photography equipments 202, such as brightness and a field angle, the range of the attitude control of photography equipment 202, and photography equipment 202 is contained. In addition, the camera-control parameter 304 is the internal information of a remote camera-control equipment proper.

[0022] 305 is the record of the access-control managed table which consists of each above-mentioned fields 301-304, by the control program which works on CPU203, registration and deletion are performed and a change is made. In addition, in this example, when a camera-control demand agrees on two or more records, any one shall be chosen using known technique and the lap between records shall be eliminated. Moreover, either [ at least ] the user-identification child 301 or the terminal identification child 303 is an empty special record, and 306 is a record chosen when agreeing in neither of a record 305. Although the case where the user-identification child 301 and the terminal identification child 303 were empty was shown in both drawing 3, as mentioned above, a record [ as / only the user-identification child 301 or whose terminal identification child 302 is empty ] is also allowed.

[0023] The tolerance of control-parameter p is as follows, for example.

Control-parameter p = Photographic coverage: omegap (psi, phi), exposure time: 0:00 to 6:00 frame rate: 5-30 [0024] In addition, the image-processing parameter for processing with image pick-up control parameters, such as brightness, a focus, and a scale factor, the attitude control parameter of a camera, and an image processing system 206 etc. is contained as a camera-control parameter 304. In addition, the tolerance of a series of camera-control

parameters 304 is held as a record of camera-control equipment, especially CPU203 proper at storage 204.

[0025] Drawing 4 is the flow chart which shows an example of a procedure which processes a camera-control demand, and a camera-control demand is performed with the reception beam CPU 203.

[0026] First, the user-identification child 301 and the terminal identification child 302 of the issuance origin of a camera-control demand are acquired at step S401. With a known user authentication means, the user-identification child's 301 acquisition is performed by the means of communications of known [ child / 302 / terminal identification ], respectively. Next, in order to acquire the record corresponding to the user-identification child 301 and the terminal identification child 302 at step S402, an access-control managed table is searched, and it judges whether there is any record which corresponds at step S403.

[0027] If there is a corresponding record, the tolerance of a demand can be obtained from the record and it will inspect whether it is the demand in tolerance at step S404. It inspects whether this inspection has the attitude control demand of a camera in the tolerance which the searched record shows.

[0028] When a demand suits in tolerance at step S405, it progresses to step S406, the system operating status of a camera 202 is inspected, and it judges whether the camera 202 is working by other camera-control demands at step S407. When a camera 202 is working, it progresses to step S408 and the priority of the demand which is working the camera 202, and the priority of the demand which it is going to process are measured now. Then, at step S409, when the direction of the demand which it is going to process from the comparison result of a priority has a high priority, the demand of a low priority which it progresses [ demand ] to step S410 and is working the camera 202 is suspended, and the advice of a hold is notified based on a corresponding user-identification child and a corresponding terminal identification child. That is, advice of a hold will be sent to the issuance origin of the suspended demand.

[0029] Next, when the camera 202 is not working at step S407, or when a demand of a low priority is suspended at step S410, while being step S411, receiving a camera-control demand and notifying demand acceptance to the issuance origin, control of the camera 202 according to the demand etc. is performed. Moreover, since the camera-control demand is memorized to storage 204 including a user-identification child, a terminal identification child, and a priority, refer to the camera-control demand memorized in S410 from step S406 of new camera-control demand processing for it.

[0030] Moreover, the direction of the demand with which the record which corresponds at step S403 was not searched, which was judged that a demand exceeds tolerance at step S405 and which is working the camera 202 at step S409 dismisses the demand which it is step S412 in the case of which [ of \*\* whose priority was high ], and is going to process, and demand rejection is notified to the issuance origin. In addition, in step S409, when the priority of two demands is the same, you may set up so that it may branch to step S410, and you may set up so that it may branch to step S412.

[0031] Moreover, about a demand of the low priority suspended at step S410, unless cancellation is required from the issuance origin etc., when the processing to a high demand of a priority is completed more, it resumes.

[0032] Thus, in the remote camera-control equipment shared in a multiuser distributed environment, by preparing the access-control managed table which uses the user-identification child and terminal identification child of the issuance origin of a camera-control demand as a key, and registering the acceptance range of a camera-control parameter into this table, mediation of two or more camera-control demands is attained, and remote camera resource sharing can be performed effectively.

[0033]

[The 2nd example] Hereafter, the image pick-up control unit of the 2nd example concerning this invention is explained. In addition, in the 2nd example, about the same configuration as the 1st example and abbreviation, the same sign is attached and the detail explanation is omitted.

[0034] In the 1st example, when there were two or more demands, whether one demand being dismissed and the procedure to suspend were explained based on the priority of the demand. However, when a demand does not collide mutually, it is possible to receive two or more demands simultaneously.

[0035] Drawing 5 is the flow chart which shows an example of a procedure which processes the camera-control demand of this example, and has given the same sign to the same step as the processing shown in drawing 4. That is, when progressing to step S408 when it is judged that it inspects and whether two demands collide at step S501 or it does not carry out collide at step S502, and not colliding, it progresses to step S411.

[0036] The camera-control demand which does not collide mutually here is the case where the demand with a high priority is filled as a result like a distribution initiation demand of image information like the case where what is necessary is just to only transmit the image information acquired from the same camera, attitude control including the image pick-up range assignment included in the demand with a high priority, or a zooming demand.

[0037] However, although it is comparatively easy to judge whether the demand with a low priority is received during processing of the demand with a high priority, when processing that a priority is high is completed and the priority under hold resumes processing of a low demand, processing is needed separately. That is, although what has the highest priority will be chosen from the suspended demands and processing will be resumed, in the demand under low hold of a priority, the demand which resumes processing, and the thing which can be resumed to coincidence may exist further.

[0038] For this reason, although the procedure of the processing which resumes a demand will repeat processing not more than step S402 sequentially from a high demand of a priority, the method of performing this efficiently is realized by searching for the relations of interdependence between other demands, in case a demand is suspended in step S410, and in case a demand is received in step S411. That is, in case a demand resumes, based on relations of interdependence, it becomes possible to acquire the set of a series of demands which can be resumed.

[0039] Processing with the same said of a hold of a low demand of the priority in step S410 is possible. That is, since the set of the demand which can continue processing is obtained in case the demand under processing is suspended and a new demand is received, it continues in the demand set as the object of a hold, what can be processed continues processing as it is, and that it can receive starts only processing of the new demand which became clear separately. If it does in this way, transfer of the advice of a demand hold performed in step S410 can be suppressed to the minimum, and the utilization effectiveness of a computer network 101 can be raised especially.

[0040]

[The 3rd example] Hereafter, the image pick-up control unit of the 3rd example concerning this invention is explained. In addition, in the 3rd example, about the same configuration as the 1st example and abbreviation, the same sign is attached and the detail explanation is omitted.

[0041] In the 2nd example, when a low demand of a priority is received, the user terminal 102 which receives distribution of image information becomes plurality. Here, when the image pick-up range is changed by high demand of a priority and it is the demand with a low priority, possibility that the image information on the range which should not be included will originally be distributed arises. The procedure of rechecking a distribution demand of the image information that a priority is low, in step S404 shown in drawing 5 as an example of the procedure which prevents this, and dismissing the demand at step S412 by the judgment of step S405 is possible. However, in this procedure, even if it becomes possible to receive again the distribution demand of image information which the image pick-up range changed again and dismissed the demand previously by high demand of a priority, it becomes impossible to resume that processing.

[0042] What is necessary is to change step S405 further, and just to change so that processing may be suspended at step S410 about the demand memorized with reference to the camera-control demand memorized to storage 204 in step S411 in order to improve this. Temporary hold processing with which it is satisfied of an access permission with this corresponding to change of for example, the image pick-up range is realizable.

[0043] However, since, as for the above-mentioned procedure, hold processing of step S410 is needed, the load of CPU203 will increase. As one approach of preventing this, the following approach is applicable.

[0044] That is, the mask of the image information which should not be essentially included in the distribution to a low demand of a priority is carried out using an image processing system 206. For example, as an example is shown in drawing 6, only the range 503 where they overlap mutually is distributed to the image pick-up range 501 set up by the high demand of a priority and the image pick-up range 502 permitted by low demand of a priority. Whenever it does in this way, since the whole image information acquired from a camera 202 is 501, a high demand of a priority will be filled. On the other hand, the distribution to a low demand of a priority will also be filled in the possible range (that is, range 503), and temporary hold processing in which it mentioned above becomes unnecessary.

[0045] Thus, by establishing the device which distributes partial image information, it can prevent distributing the image which should not be included originally to a camera-control demand or a distribution demand of image information, and a low demand of these priorities can be filled.

[0046]

[Modification(s)] In each example mentioned above, although the photography equipment 202 managed by remote camera-control equipment explained only one set of an example, the same is completely said of the case where two or more photography equipments 202 are managed by one remote camera-control equipment. When the camera 202 which is inspecting the system operating status and is not working about each camera 202 in S410 specifically exists from step S406 shown in drawing 4 and drawing 5, demand processing is performed using the camera 202. Moreover, when all the cameras 202 are working, the priority of the demand which is working each camera 202 is measured, and processing not more than step S408 is most performed to a low demand of a priority.

[0047] If it does in this way, since it will seem that one photography equipment 202 exists, about the camera-control demand published from a user terminal 102, it is not necessary logically to add [ from ] modification at all outside remote camera-control equipment.

[0048] Moreover, in the example mentioned above, although sound information was treated as a thing attached to image information, generally it is not this limitation. For example, it realizes easily by defining a control allowance parameter with the identifier of the audio input unit which is attached to the remote camera 103 in the control parameter 304 which mentioned above that forbade distribution of sound information or only a specific time zone received a distribution demand about the group of the specific user-identification child 301 and the terminal identification child 302.

[0049] In addition, even if it applies this invention to the system which consists of two or more devices, it may be applied to the equipment which consists of one device.

[0050] Moreover, it cannot be overemphasized that this invention can be applied also when attained by supplying a program to a system or equipment.

[0051]

[Effect of the Invention] As explained above, according to this invention, the image pick-up control unit which is based on management information, and receives, dismisses or suspends the control demand of an image pick-up resource, and its control approach can be offered.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

**[Drawing 1]** The block diagram showing the example of a configuration of the distributed system using the image information using the remote camera of one example concerning this invention,

**[Drawing 2]** The block diagram showing the example of a configuration of the control device of the remote camera shown in drawing 1,

**[Drawing 3]** Drawing showing an example of the access-control managed table stored in the store of the camera-control equipment shown in drawing 2,

**[Drawing 4]** The flow chart which shows an example of a procedure which processes a camera-control demand,

**[Drawing 5]** The flow chart which shows an example of a procedure which processes a camera-control demand of the 2nd example,

**[Drawing 6]** It is drawing explaining signs that the partial image information on the 3rd example is distributed.

**[Description of Notations]**

101 Computer Network

102 User Terminal

103 Remote Camera

202 Photography Equipment (Camera)

203 CPU

204 Storage

207 Communication Device

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**[Translation done.]**



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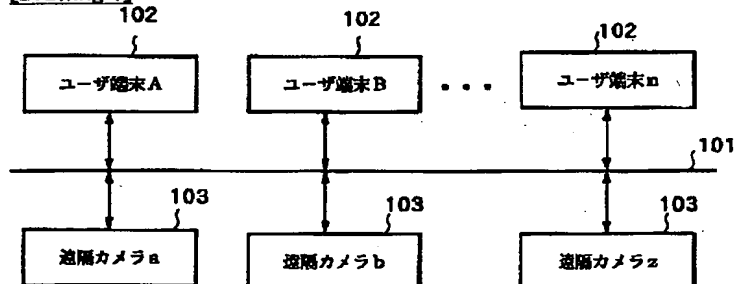
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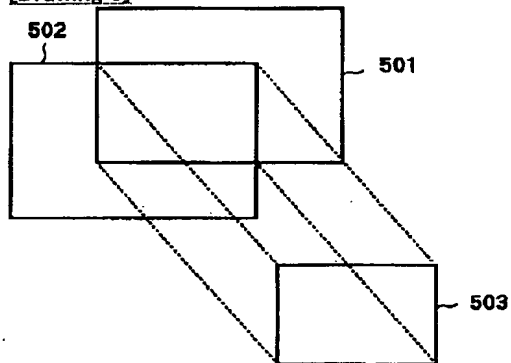
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## DRAWINGS

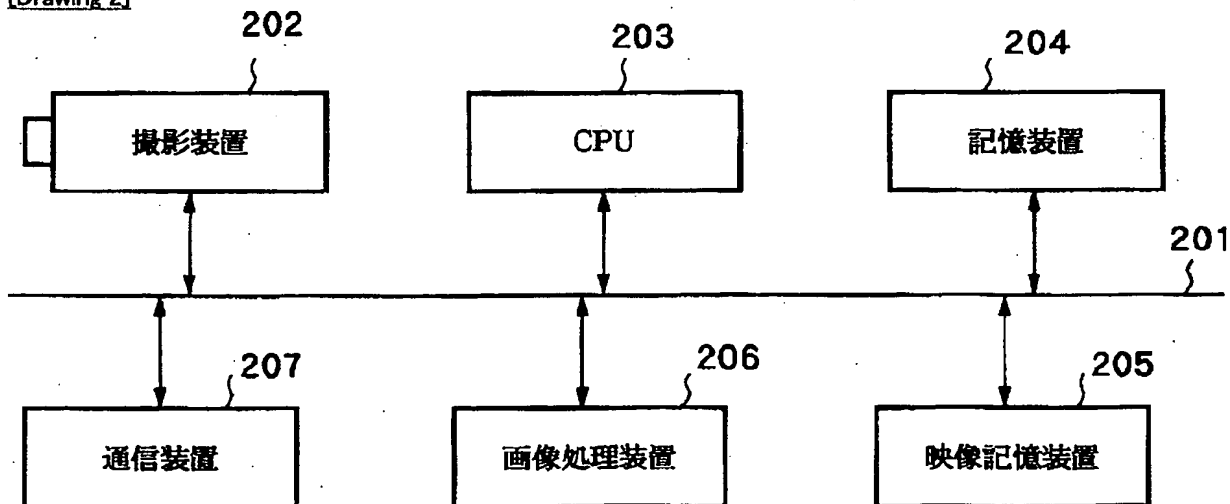
[Drawing 1]



[Drawing 6]



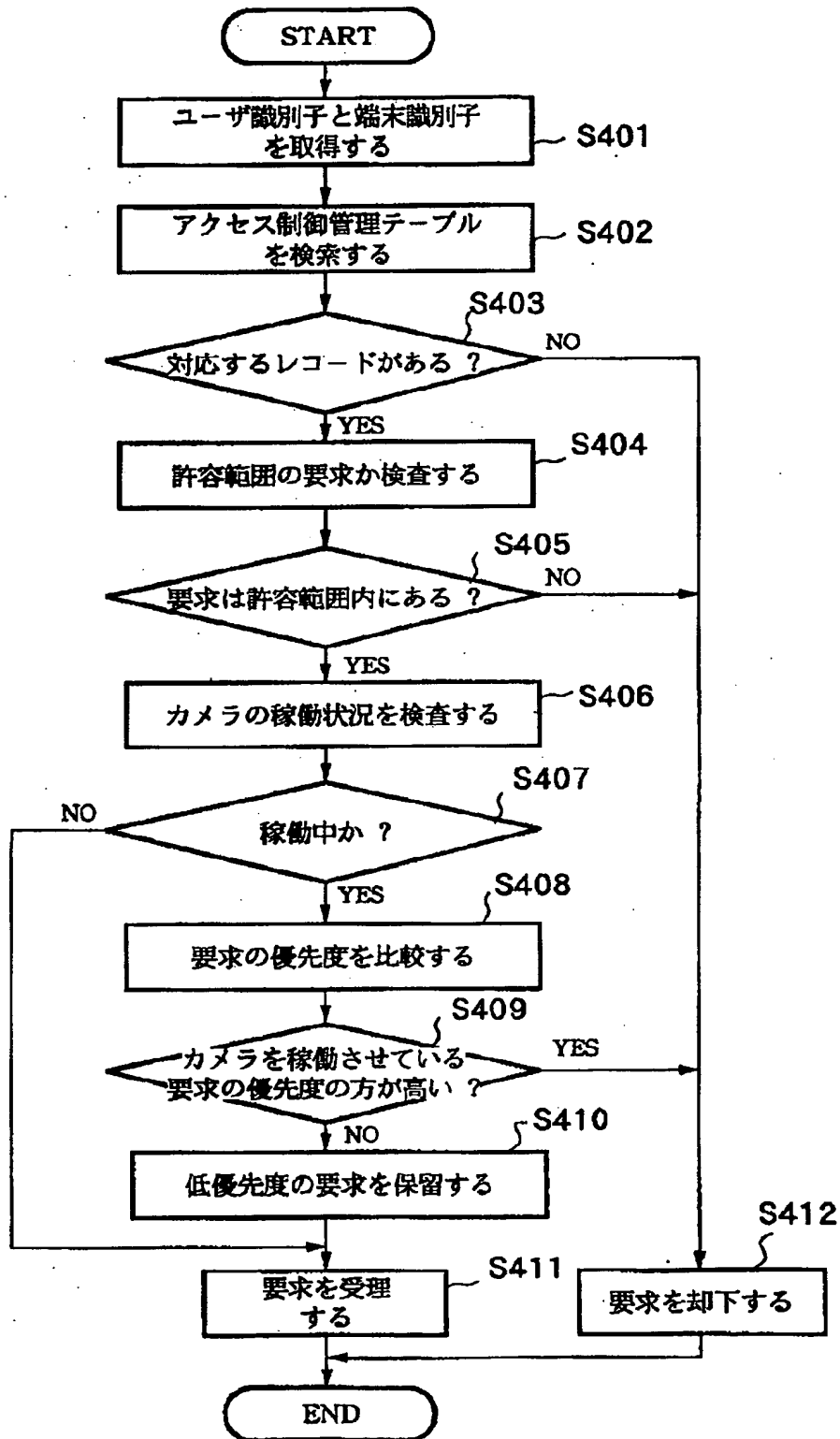
[Drawing 2]



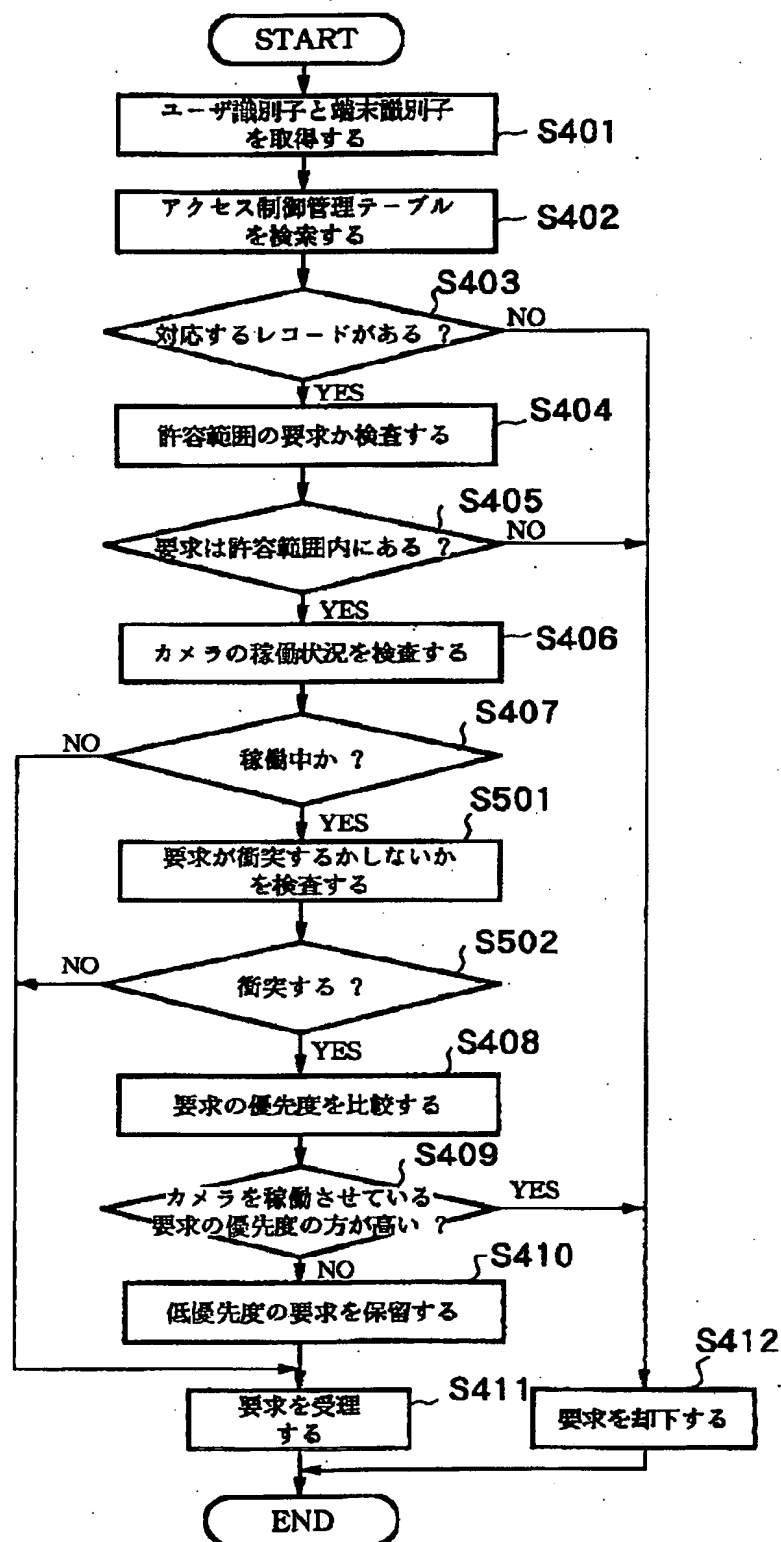
[Drawing 3]

301 ユーザ識別子	302 端末識別子	303 優先度	304 カメラ制御パラメータ	
ユーザ1	端末S	2	制御パラメータp	305
ユーザ2	端末T	4	制御パラメータq	305
...	...	...	...	
-----	-----	0	制御パラメータr	306

[Drawing 4]



[Drawing 5]



[Translation done.]